

WHAT IS CLAIMED IS:

1. A method for dynamic bandwidth management proportionately distributing resource allocation within a time period as a function of an executing task, comprising:
  - tagging system commands with a bandwidth identifier;
  - setting bandwidth limits for resources with programmable hardware registers;
  - issuing commands to managed resources;

10 establishing a hardware bandwidth management system that indicates how the managed resources can be used during a programmable time slice; and

issuing commands to unmanaged resources.
- 15 2. A multiprocessor computer system comprising:
  - at least one managed resource;
  - at least one unmanaged resource;
  - at least one of programs and other entities that need to access a managed resource; and

20 proportional resource allocation means operational to distribute commands and/or informational packets substantially evenly over an operational time period from a source to a managed resource.
- 25 3. The apparatus of claim 2 wherein:
  - the managed resource is at least one of bus means, memory means and I/O means; and
  - the programs and other entities can freely access unmanaged resources while being restricted in their access to managed resources.
4. A method of minimizing congestion in resource access

comprising the steps of:

    sending predetermined numbers of managed commands only during times permitted by a bandwidth control mechanism; and

5     adjusting values inserted in programmable registers to set the number and timing of managed commands issued by a program.

5.     A method of managing access to a given resource comprising:

10     authorizing, upon request from a program, a class ID for that program to use when accessing a given resource;

    checking all resource access attempts for a class ID indicating the access attempt is bandwidth managed; and

15     allowing access attempts, having a class ID, to access a managed resource only at times substantially evenly distributed across an operational time period.

6.     Apparatus for managing access to a given resource comprising:

20     authorizing means, in responding to a request from a program, operating to provide a class ID for that program to use when accessing a given resource;

    control means operable to check all resource access attempts for a class ID that provides an indication that the 25 access attempt is managed; and

    further control means operable to provide signals that allow access attempts, having a managed class ID, to access a given resource only at times substantially evenly distributed across an operational time period.

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7.     A computer program product for minimizing congestion in resource access, the computer program product having a

medium with a computer program embodied thereon, the computer program comprising:

computer code for sending managed commands only during times permitted by a bandwidth control mechanism; and

5 computer code for adjusting values inserted in programmable registers to set the number and timing of managed commands issued by a program.